

THE 1982 HENRY H. STORCH AWARD SYMPOSIUM:
INTRODUCTION TO THE SYMPOSIUM

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The Henry H. Storch Award in coal research was established in 1964 as a memorial to Dr. Storch for his contributions to science as an outstanding physical chemist and research director. His contributions to coal chemistry, coal hydrogenation, the Fischer-Tropsch synthesis, and catalysis were of monumental proportions. These topics, however, barely cover the scope of his scientific interests and accomplishments, which also included thermodynamics, gas phase kinetics, basic studies of X-rays and the low voltage arc, and the separation of useful compounds from salt deposits. He was a man of diverse talent; in the words of one of his co-workers, "Dr. Storch was as proficient in considering a high-pressure plant or cost estimates as he was in studies of coal structure or reaction mechanisms." It is said that Dr. Storch viewed the chemistry and chemical utilization of coal as a great challenge, "a last frontier among natural materials." Much of our understanding of coal science today resulted from his acceptance of that challenge.



Dr. Henry H. Storch
1915 - 1961

The award in his memory is presented annually by the Fuel Division of the American Chemical Society to a U. S. citizen who, during the preceding five years, contributed significantly to fundamental or engineering research on coal. To have my name added to the list of distinguished scientists who have received the Award is an unexpected honor that I accept with the deepest humility.

1964 - Irving Wender
1965 - Everett Gorin
1966 - R. A. Freidel
1967 - Henry R. Linden
1968 - Joseph Field
1969 - Philip Walker
1970 - (no award)
1971 - George R. Hill
1972 - Robert Van Dolah

1973 - Arthur M. Squires
1974 - R. Tracy Eddinger
1975 - G. Alex Mills
1976 - Heinz W. Sternberg
1977 - Frank C. Schora
1978 - Wendell Wiser
1979 - D. D. Whitehurst
1980 - Richard C. Neavel
1981 - Sol W. Weller

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Herbert L. Retcofsky, Award Recipient

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Herbert L. Retcofsky, Richard G. Lett, Dennis H. Finseth, and Richard F. Sprecher
SOME CURRENT APPLICATIONS OF MAGNETIC RESONANCE IN COAL LIQUEFACTION RESEARCH
Pittsburgh Energy Technology Center

Patrick G. Hatcher,^{1/} Irving A. Breger,^{1/} Larry W. Dennis,^{2/} and Gary E. Maciel^{2/}
CHEMICAL STRUCTURES IN COAL: NMR STUDIES AND A GEOCHEMICAL APPROACH
^{1/} U. S. Geological Survey and ^{2/} Colorado State University

Paul C. Painter

FOURIER TRANSFORM INFRARED STUDIES OF COAL STRUCTURE
The Pennsylvania State University

Curt M. White

INSTRUMENTAL METHODS FOR THE DETERMINATION OF PAH IN COAL AND COAL DERIVED MATERIALS
Pittsburgh Energy Technology Center

The 1982 Award Symposium consists of four papers, all of which describe applications of spectrometry in coal research -- magnetic resonance, infrared, and mass spectrometry coupled with gas chromatography. The first and fourth papers in the symposium are from my own Research Center. "Some Current Applications of Magnetic Resonance in Coal Liquefaction Research" describes the usefulness of nuclear magnetic and electron spin resonance in investigating possible modes of catalyst deactivation, the role of free radicals in coal pyrolysis and coal liquefaction, and the fate of hydrogen during liquefaction processes. Discussions of state-of-the-art and potentially valuable "Instrumental Methods for the Determination of PAH (Polynuclear Aromatic Hydrocarbons) in Coal and Coal-Derived Materials" is the subject of the presentation by Mr. Curt M. White. Mr. White will preface his presentation with a brief historical overview.

The second paper, "Chemical Structures in Coal: NMR Studies and a Geochemical Approach," provides new insight into coal genesis and metamorphism. I have asked the author, Dr. Patrick G. Hatcher, to dedicate his paper to Dr. Irving Wender, the first Henry H. Storch Award recipient and a former director of the Pittsburgh Energy Technology Center. "Fourier Transform Infrared Studies of Coal Structure," by Dr. Paul C. Painter, describes this relatively new technique in coal research and compares the results with more conventional infrared spectral studies. Dr. Painter's paper is dedicated to Dr. Robert A. Friedel, the person who first introduced me to the fascinating world of coal research and the third person to receive the award. It was my privilege to have worked many years with both Drs. Wender and Friedel. Their encouragement, helpfulness, and willingness to listen played no small part in my own scientific career. The dedication of these two papers to them is a small token of my appreciation.